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Viewpoint

# Reflections on the opportunities for mining companies to contribute to the United Nations Sustainable Development Goals in Sub-Saharan Africa

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**Reflections on the opportunities for mining companies to contribute to the United Nations Sustainable Development Goals in Sub-Saharan Africa**


## Abstract

The United Nations Sustainable Development Goals (SDGs) set targets for all nations in the most important areas of human development, as well as environmental protection and climate change for the period 2015-2030. This viewpoint discusses how mining companies can contribute to the implementation of SDGs through developing region-specific approaches to sustainable development. It argues that investment and cross-sector collaboration for the provision of collective goods such as health, education and infrastructure should be the main focus of the sustainable development policies of the mining companies operating in developing countries. We believe that academics and practitioners could further develop indicators to measure the progress of industry towards the SDGs and devise innovative solutions that link these to mining sector operations. Further research into mineral production at the national level can extend the understanding about the implications of sustainable development for mineral commodities, mines and mineral enterprises.



## Keywords

Sustainable Development Goals (SDGs); Corporate Social Responsibility (CSR); sustainable development; sub- Saharan Africa; mining

## 1. Introduction and background

The aim of this viewpoint is to reflect on how mining companies operating in sub-Saharan Africa can maximise their contribution towards the implementation of the United Nations Sustainable Development Goals (SDGs). Focusing on the release of the recent white paper, *Mapping Mining to the Sustainable Development Goals: An Atlas* (UNDP, 2016a), which emphasizes a sector-specific approach to development, we aim to further this discussion by adding a further region-specific dimension to drawing sustainable development strategies in the mining sector. First, the viewpoint discusses three major approaches to sustainable development adopted by the mining industry and three main priority areas for maximising the sector's contribution towards the SDGs. It then develops a series of recommendations for further research and practitioner action. We utilise data from the World Bank Development Indicators Databank (World Bank, 2016a) and the Africa Power Mining Projects Database (World Bank, 2016b) in order to provide an overview of the mining industry in the region and illustrate the magnitude of the challenges ahead if the SDGs are to be achieved.

In 2015 the UN Sustainable Development Summit, building on the legacy of the UN Millennium Development Goals, agreed upon a new set of 17 SDGs to be achieved by 2030 (UN, 2016). Officially launched on 1 January 2016, these goals aim to reduce poverty, hunger and inequalities by improving health, well-being, education, gender equality, work conditions, economic growth, peace, justice, institutions and partnerships, and, by increasing the availability of clean water, improving sanitation, and providing affordable and green energy. The goals relate to themes of industry, innovation and infrastructure, sustainable cities and communities, responsible consumption and production, climate action, as well as life below water and on land. Though the SDGs focus on national level development priorities requiring country-based leadership, business and industry are encouraged to contribute to the fulfillment of these goals through partnerships, private investment and market-based solutions (SDG Fund et al., 2015). Indeed, multi-stakeholder partnerships and collaborations, where public and private parties mobilise and share resources, expertise and technology, are seen as a solution to complex challenges. The public, private and not-for-profit sectors are encouraged to set common policy agendas and share accountability (SDG Fund et al., 2015).

At the global level, business and industry are recognising their role in sustainable development and beginning to devise initiatives and standards that address development, and social and environmental challenges within the sphere of business operations. For instance, the World Business Council for Sustainable Development (WBCSD) launched the SDG Business Hub, which aims to connect

businesses with the SDGs and develop guidance for companies to align their strategies with the new sustainable development agenda (WBCSD, 2016). Along with the Global Reporting Initiative (GRI) and the UN Global Compact, the WBSCD has also released a step-by-step guide that makes recommendations to companies to embed the SDGs (GRI et al, 2015). Similarly, at the global level, the contribution of the mining sector to sustainable development has been promoted by a number of organisations and initiatives such as the International Council for Metals and Minerals (ICMM, 2012, 2015) and the Mining, Minerals and Sustainable Development Project (IIED and WBCSD, 2002).

There are also sector-specific recommendations for the mining industry, proposed by a number of organisations, including the United Nations Development Programme (UNDP) which, following an online public consultation, released *Mapping Mining to the Sustainable Development Goals: An Atlas*. It prescribes a number of sustainable development strategies for mining companies (UNDP, 2016a, 2016b). This white paper links all 17 of the SDGs and their sub-headings to mining sector activities (UNDP, 2016a). We suggest that in order to maximise their contributions to the SDGs, mining companies should develop relevant sustainable development strategies by considering region-specific priorities and challenges in sub-Saharan Africa. We include examples of indicators that can be used to measure national progress towards each SDG using the data from the World Bank Development Indicators Databank (see Table 1) (World Bank, 2016a). It is evident that the SDGs form an important priority for policy formulation on human development in sub-Saharan Africa. However, significant efforts are required to advance the progress towards their fulfillment by 2030, making a clear need for coordinated contributions from various parties and sectors.

A region-specific approach to the SDGs could therefore allow mining companies to contextualise their sustainable development strategies according to regional economic, social and institutional challenges as well as local developmental needs. In collaboration with parties from the public and not-for-profit sectors, companies can seek to develop long-term solutions in the specific areas of sustainable development. In sub-Saharan Africa, country-level leadership may be in need of investment, technology and expertise that mining companies can share within such collaborative initiatives.

When referring to the mining sector in sub-Saharan Africa, we broadly incorporate mineral production of domestic and foreign companies engaged in small, medium and large-scale operations, extracting a range of metals and minerals for internal consumption as well as for exports. Both domestic and foreign mining companies can aid national progress towards the SDGs. However, each

country and region would require priority areas in the way the industry can advance progress towards the SDGs. Acknowledging the debates concerning the 'resource curse' in the region and the discussions on maximising the link between mineral production and socio-economic development (Gamu et al, 2015; Horsley et al, 2015), we support the view that mineral production in sub-Saharan Africa can serve the needs for industrial, economic and social development across the continent (AfDB and BMGF, 2015). Recognising that artisanal, small and medium scale mining enterprises are organised and managed in different ways and their contributions to national and regional development may differ from that of large scale mining companies (Hilson and McQuilken, 2014; Hilson 2016), our discussion mostly addresses the latter group. There is a lack of available data that would allow to comprehensively review the entire spectrum of mineral production in sub-Saharan Africa. For this paper, we refer to the data collected by the World Bank Africa Power Mining Projects Database (a data platform on the extractive industries in the sub-Saharan countries) (World Bank, 2016b). This therefore limits our outlook on export-oriented mining commodities.[1] For a further review of industrial minerals in sub-Saharan Africa please view the report by UNDP (2015).

## 2. Approaches for mining companies to help support the achievement of the SDGs

A link between the SDGs and mining may not be immediately visible, but becomes more so when considering the sector's importance in many national economies in sub-Saharan Africa. Trade in mineral commodities, expressed as a proportion of mineral ores and metals (excluding oil and gas) in merchandise exports, is one of the indicators used to demonstrate the significance of mineral production and trade in a national context (Otchia, 2015). The top ten countries in sub-Saharan Africa (for which data are available) in this respect are Sierra Leone (86%), Zambia (78%), Guinea (77%), Mauritania (59%), Niger (46%), Madagascar (37%), Mozambique (34%), South Africa (26%), Namibia (25%), and Zimbabwe (24%) see Figure 1.

The countries listed above, with the exceptions of Namibia and South Africa, all fall into the category Least Developed or Low Income Countries (OECD, 2015). Low economic development in these countries presents a significant challenge when it comes to the SDGs. As host governments struggle to address all social and economic challenges in the region, business and industry are therefore called

[1] The database is compiled using reports from public domain and covers 455 projects in 28 sub-Saharan African countries. The database includes the following minerals and metals: mineral processing (aluminium smelting, cement plant) and the primary mineral production of bauxite, chromium, coal, cobalt, copper, diamonds, gold, ilmenite, iron ore, lead, manganese, nickel, niobium, palladium, PGM, phosphate, platinum, potash, rare earths, rhodium, ruthenium, rutile, silico-manganese, silver, tantalum, uranium, vanadium, zinc, zirconium.

on to make further contributions towards human development (AfDB and BMGF, 2015; UNDP, 2016b; WBCSD, 2016). In addition, as mining often takes place in rural areas, where socio-economic development lags behind urban areas, particularly in terms of health, education, provision of social services and economic opportunities, companies need to adapt their policies to reflect local challenges of sustainable development. However, it must also acknowledged that the contribution of the mining sector to the sustainable development of nations should be seen in conjunction with wider economic policies. A range of economic policies that promote infrastructure, construction, agriculture, manufacturing and services and aim to diversify national and regional economies to avoid overdependence on mineral production are therefore needed (Dietsche, 2014; UNECA, 2011).

Presently, three broad approaches are available to mining companies to demonstrate their commitment and contribution to sustainable development and contribute to diversification: 1) tax contributions to national economies; 2) voluntary initiatives to embed the sustainability agenda in core business operations; and 3) voluntary contributions to the provision of collective goods such as health care and education. These approaches are not mutually exclusive but complementary. Each is now briefly reviewed.

The first approach concerns legally required contributions to national economies. Fiscal contributions are made through corporate taxation, royalties and other regulated monetary payments to state budgets. These payments enhance the capacity of governments to support the provision of social services, leading to greater achievements in the SDGs. Fairness and transparency in the distribution of revenue by national governments in mineral- rich countries can be a challenge, and the efforts to fight corruption at all levels are also part of the SDG strategy. The Extractive Industries Transparency Initiative (EITI), of which requires mining companies to report payments made to government, can play an important role in this process (Furstenberg, 2015; Sturesson and Zobel, 2015; EITI, 2016).

The second approach is increasingly becoming a norm in the corporate world. By embedding sustainability at the core of business operations, and by integrating environmental, social and health values in business activities, companies are recommended to improve their competitive advantage by incorporating sustainable development policies (Laszlo and Zhexembayeva, 2011). This approach extends to changing the way companies operate and influence their stakeholders such as employees, clients, suppliers and the natural environment. Many guidelines are now available in this area, including the UN Global Compact, the Global Reporting Initiative, ISO 26000 Guidance for Corporate Social Responsibility and varies codes of practice conceived by the International Council

for Mining and Metals (GRI et al, 2015; ICMM, 2012; ICMM, 2015; IIED and WBCSD, 2002). SDGs 5 through 9, 11, 12 and 15 (Table 1) are all relevant to these guidelines and the ways in which mining companies could embed sustainability in their operations.

Recently, not only the accountability and mitigation of negative impacts within the 'do not harm' approach, but a proactive contribution of the mining industry to economic, social and environmental sustainability has been examined with the 'do good' approach. One example is a promotion of procurement of goods and services by mining companies locally in developing countries (BGR, 2016).

The third approach is also voluntary, but should be given greater attention by the sector, especially those mining companies operating in developing countries. It encourages firms to contribute to the provision of collective goods such as health, education, transportation and communication. These are essential for the market operations of companies, but also stand to benefit local communities in circumstances where governments are failing to provide sufficient levels of public services.

This can be achieved through collaboration between mining companies, non-governmental organisations and governments. This approach is allows companies to gain non-market competitive advantage in the global context (Boddewyn and Doh, 2011). As a guide, the collective goods approach can be developed with reference to SDGs 1-4, 10-11, 13-14, and 16-17 (Table 1). The actual arrangements such as alliances and partnerships through which companies can contribute to the provision of collective goods need to be further explored by academics and practitioners.

An important way in which the mining industry can contribute to development is through support of local infrastructures and increasing the access to water (see SDG 6). Figure 1 maps the spatial distribution of clean water sources across sub-Saharan Africa. It shows that the southern and western sections of the region are the most progressive whereas the central section is in need of the most improvement. The mining industry operating in sub-Saharan Africa could support local communities by improving the provision of clean water in these locations.

## 3. Future opportunities for mining companies to contribute to SDGs

Aside from the approaches outlined there are also a number of other opportunities for the mining sector in sub-Saharan Africa to contribute to the SDGs. It is already an important mining region globally (BGS, 2016), where the mining industry contributes to taxation, royalties and products destined for international trade, but also provides much-needed resources for internal consumption such as industrial minerals for construction and manufacturing industries. At the global level, metals and minerals from Africa could supply sectors that contribute to the development of climate change mitigation technologies, as well as produce electrical and electronic equipment (Bloodworth and Gunn, 2012). Mining activities can come into conflict with the implementation of certain SDGs such as 15 ("Life on Land") and 11 ("Sustainable Cities and Communities"). People and organisations therefore need to have access to and be involved in planning decisions concerning mining projects, and be have access to knowledge concerning the potential impacts of the sector's activities on other land uses such as tourism, agriculture, traditional livelihood activities and nature conservation. There is also a need for further improvements in environmental governance and national legislation that concern environmental monitoring in developing countries (Economic Commission for Africa, 2004, 2009).

As the SDGs focus on wider societal achievements, mining companies need to think of how to expand the scope of their operations to be able to maximise their efforts towards sustainable development and depart from focusing on narrow firm level performance and deliver wider impacts. What do mining companies have at their disposal that could be used to achieve the maximum impact for human development? The answer may lie in the capabilities that mining companies possess, such as managerial, accounting, engineering and geological knowledge and skills, human resources, investment resources and global networks. Extending knowledge-sharing activities and actively promoting economic spill-overs to other sectors presents one of the most significant opportunities for mining companies to demonstrate their commitment to the SDGs. Mining companies could share findings from geological research with other services and organisations in the region. For example, companies could share their managerial expertise to support local institutions and entrepreneurs through employer-sponsored volunteering schemes (see Burchell and Cook, 2013) as well as share their wider global networks to assist regional economies.

When prioritising activities in sub-Saharan countries, it is suggested that companies should focus on the three critical development areas where collaboration between mining companies and other sectors for multiplier effects are encouraged: 1) the improvement of physical infrastructures including water

supply, electricity, road and communications, which can be further extended for the benefit of regional economies; 2) development of renewable energy and climate change resilience capabilities; and 3) health and education advances including maternal medical care. Much that can be changed in rural areas to ensure the effective provision of water, energy, health and education. Mining companies have already established models for community development through in-house activities, outsourcing to corporate foundations and entering into partnerships and alliances with other organisations (Yakovleva, 2008). What is required further is a commitment to making change alongside the SDGs and clear leadership to step outside the mine gates and extend the firm's influence on regional economies beyond traditional Corporate Social Responsibility (CSR) or community engagement activities practiced thus far. Although mining companies have traditionally been active in infrastructure development that aid mineral production, they can also search for solutions to contribute to climate change, health and education.

A review of the World Bank database on the extractive industries in sub-Saharan Africa points to an-often short lifetime of mines, which can vary from two to over 100 years (World Bank, 2016b). Short-term mining projects may be seen as problematic for regional development for several reasons. They may provide limited economic input, whilst at the same time disrupt local social and environmental conditions with pollution and landscape changes. Long-term mine projects may provide lasting employment opportunities, catalyse business growth and lead to economic spill-overs to other sectors such as infrastructure and transport, but may keep the land locked into mining, postponing land reclamation and the release of land for future use.

## 4. Recommendations

With a view to contributing to the implementation of the SDGs in sub-Saharan Africa, five recommendations are made here. The first is industry investment into collective goods, one of the most promising advancements in the area of business contribution to sustainable development. Although there are limitations for mining companies to achieve national level changes, as operations are locally fixed, there is still a potential for them to contribute to the SDGs through direct action at the local level. This could be done not only through monetary contributions, but through knowledge sharing, collaborations and partnerships in building and supporting shared physical and soft infrastructures in the areas of transportation, communication, energy and water supply, health, and education. It may involve long-term planning for local and regional needs in collaboration with public and non-for-profit institutions for provision of collective goods.

The second is through devising indicators to measure industry progress. In order to connect mining companies closer with the SDGs and demonstrate their commitment and accountability in the areas of sustainable development, detailed and contextualised indicators need to be devised to measure progress that mining companies are making towards the SDGs. Existing indicators on sustainable development utilised by mining companies such as the Global Reporting Initiative (GRI) guidelines (GRI et al., 2015) can be extended further to engage with the SDGs as suggested by the UNDP (UNDP et al., 2016b). Research and practitioner communities could further explore how national-level goals identified by the SDGs (see Table 1) can be translated into firm or organisation level indicators for mining companies.

The third is innovative solutions. Academics and practitioners need to search for further innovative solutions that link the SDGs and mining sector operations. Future research and industry initiatives could examine how to ensure that industry activities turn into visible changes at the national level attainment of SDGs; how can mining companies contribute to wider poverty alleviation, health and education improvements in a country and climate change resilience; and how mining companies can better engage with national programmes for sustainable development. The potential and mechanisms by which the mining industry as a whole can engage in sharing and the circular economy in sub-Saharan Africa could also be explored further (World Economic Forum, 2015).

The fourth is in the area of mining and development. Future research could explore finer links between mineral production and sustainable development by examining the differences between impacts and development contribution of different mineral commodities, as well as the differences between organisational forms in the mining industry. Discussions around environmental and social impacts vis-à-vis economic impacts can be studied in the context of the mine lifecycle (short-lived vs. long-term mine projects), size of mining businesses (small-scale and large-scale mining), mining technologies (open-cast and underground mines), type of mineral projects (brownfield vs. greenfield investments) as well as legitimacy and conflict in catchment communities.

Finally, there is a need for country specific mineral studies**.** Research could further investigate country-specific strategies, contextualising the industry further within country-specific institutional, economic, social and environmental conditions. Such studies could illustrate variations within sub-Saharan Africa, reveal best practice and identify differences between mineral and economic policies. One of the topics that deserves further attention is the study of industrial minerals for local and

regional use, where local industries can have further impacts on the realization of the SDGs at a national level. Finally, further studies can produce advanced analyses of the statistical data concerning the indicators suitable for estimating progress in the implementation of the SDGs, similar to those illustrated in Table 1.

## 5. Conclusion

In conclusion, we argue that the 2030 sustainable development agenda and SDGs challenge mining companies to go beyond the scope of core business activities and beyond the mine gates to make a lasting impact on poor communities in developing countries. This means that existing CSR and stakeholder engagement strategies need to have a greater focus on human development such as eliminating poverty and hunger; the exact areas where mining companies have had a fragmented history of involvement (AfDB and BMGF, 2015; ICMM, 2015). The SDGs put greater moral obligation on mining enterprises to respond to the wider societal challenges (UNDP, 2016a; WBCSD, 2016). Overall, CSR extends into areas that are important to stakeholders, and the SDGs bring to the fore societal challenges such as poverty, inequality and environment degradation in developing countries that go beyond the mine gates. Further cross-sector collaboration and innovative arrangements need to be sought in order to achieve the desired societal impact lasting after the mine closure. The challenge ahead of the mining industry is to embrace the SDGs in sub-Saharan Africa and to demonstrate leadership and commitment to the reduction poverty and hunger and the improvement of health, education and peace in developing nations.

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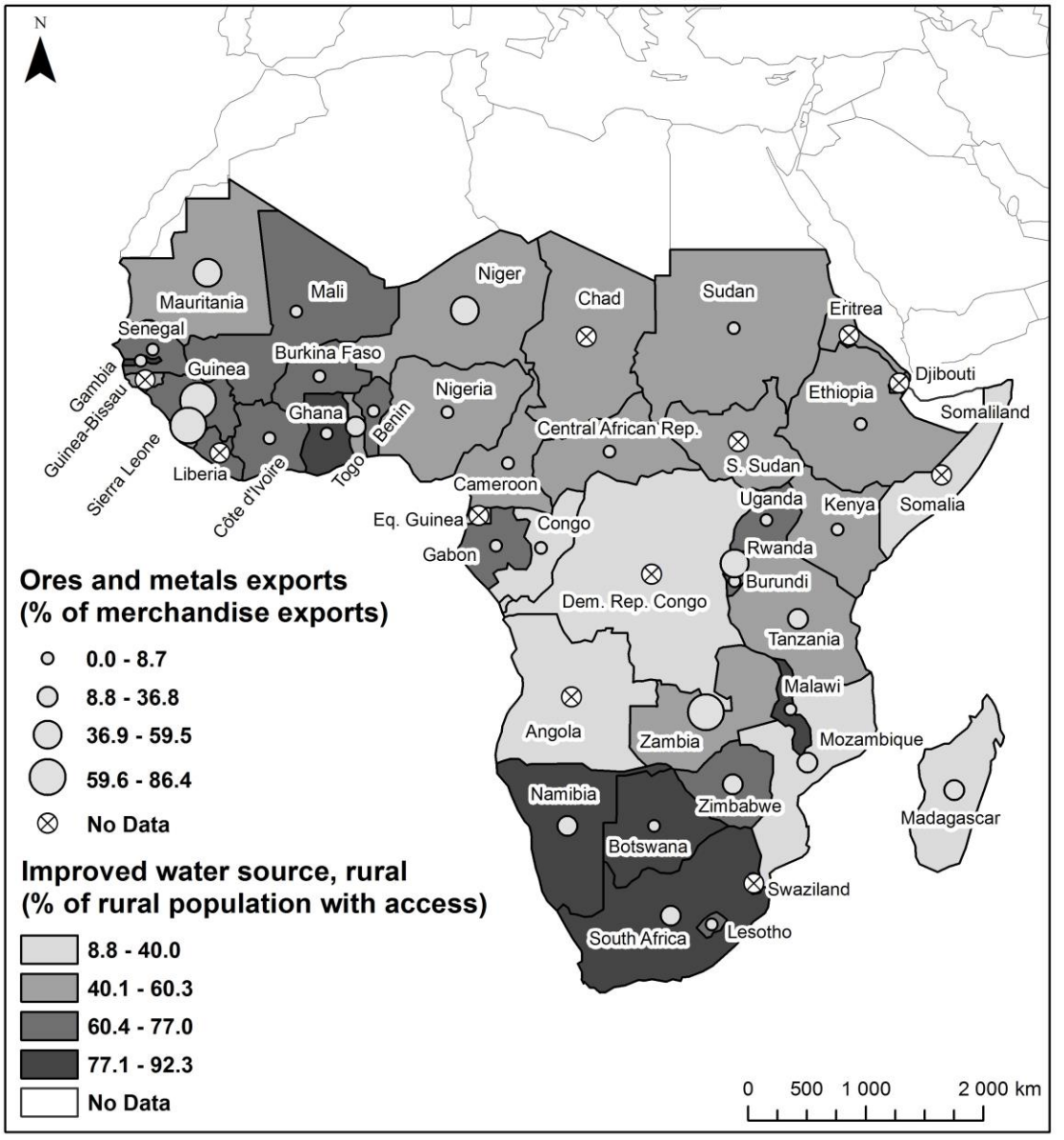
N
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Chad
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Eritrea
Djibouti
Senegal
Burkina Faso
Guinea
Gambia
Guinea-Bissau
Nigeria
Ethiopia
Somaliland
Ghana
Benin
Central African Rep.
Sierra Leone
Liberia
Côte d'Ivoire
Togo
S. Sudan
Cameroon
Uganda
Kenya
Somalia
Eq. Guinea
Congo
Gabon
Rwanda
Burundi
Dem. Rep. Congo
Tanzania
Malawi
Angola
Zambia
Mozambique
Namibia
Zimbabwe
Madagascar
Botswana
Swaziland
South Africa
Lesotho
Ores and metals exports
(% of merchandise exports)
0.0 - 8.7
8.8 - 36.8
36.9 - 59.5
59.6 - 86.4
No Data
Improved water source, rural
(% of rural population with access)
8.8 - 40.0
40.1 - 60.3
60.4 - 77.0
77.1 - 92.3
No Data
0 500 1 000 2 000 km

## List of Tables and Figures

Table 1 Sustainable development goals and selected indicators for sub-Saharan countries

Source: Data from World Bank, 2016a, World Development Indicators.

Notes for Table 1

SDG1 No Poverty. Target - Eliminate poverty measured as income of $1.25 a day. Indicator - Poverty headcount ratio at $1.90 a day (PPP 2011) (% of population) 2011 data. Poverty data mostly for 2011. Some individual figures with a sign are for different years, but not earlier than 2006.

SDG2 No Hunger. Target – By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons. Indicator - Prevalence of stunting, height for age (% of children under 5) - 2014 data. Some figures are later or earlier than 2014, but not earlier than 2006.

SDG3 Good health and well-being. Target - By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births. Indicator - Maternal mortality ratio (modelled estimated for 100,000 live births) 2015 data.

SDG4 Quality education. Target - By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and Goal-4 effective learning outcomes. Indicator - Gross enrolment ratio, secondary, both sexes, %, 2014 data. Gross enrolment ratio, secondary, both sexes (%) data for 2014. Some figures are later or earlier than 2014, but not earlier than 2007.

SDG5 Gender equality. Target - End all forms of discrimination against all women and girls everywhere. Indicator – Country Policy and Institutional Assessment (CPIA) Gender equality rating (1=low, 6=high) – 2015 data. Data for Angola is for 2013.

SDG6 Clean water and sanitation. Target - By 2030, achieve universal and equitable access to safe and affordable drinking water for all. Indicator - Improved water source rural (% of rural population with access) 2015 data.

SDG7 Affordable and clean energy. Target - By 2030, ensure universal access to affordable, reliable and modern energy services. Indicator – Access to electricity, rural (% or rural

population) 2012 data.

SDG8 Decent work and economic growth. Target - By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value. Indicator - Unemployment, total (% of labour force) (modelled ILO estimates) 2014 data.

SDG9 Industry, innovation and infrastructure. Target - Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries. Indicator – Industry, value added (% of GDP) 2015 data.

SDG10 Reduced inequalities. Target - Adopt policies, especially fiscal, wage and social protection policies, and progressively achieve greater equality. Indicator – CPIA social protection rating (1=low to 6=high) 2015 data.

SDG11 Sustainable cities and communities. By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums. Population living in slums (% of urban population) 2014 data.

SDG12 Responsible consumption and production. Target - By 2030, achieve the sustainable management and efficient use of natural resources. Indicator –CPIA Policy and institutions for environmental sustainability rating (1=low to 6=high) 2015 data.

SDG13 Climate action. Target - Strengthen resilience and adaptive capacity to climate- related hazards and natural disasters in all countries. Indicator - Disaster risk reduction progress score (1=low to 5=high) 2011 data.

SDG14 Live below water. Target - By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information. Indicator - Marine protected areas (% of territorial waters) 2014 data.

SDG15 Life on land. Target - By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements. Indicator - Global Environmental Facility benefit index for biodiversity (0=no biodiversity potential to 100=maximum) 2008 data.

SDG16 Peace, justice and strong institutions. Target - Substantially reduce corruption and bribery in all their forms. CPIA Transparency, accountability and corruption rating (0=low to 6=high) 2015 data, Angola for 2013. Other data are missing.

SDG17 Partnerships for goals. Target - Enhance North-South, South-South and triangular

regional and international cooperation on and access to science, technology and innovation and enhance knowledge sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism. Indicator - Internet user (per 100 people) 2014 data.

Table 2 Mining in sub-Saharan countries in 2014

Source: Data from World Bank, 2016a, World Development Indicators and World Bank, 2016b, Energy and extractives Open Data Platform.

Note: n/a - data not available. Data for ores and minerals exports are for 2014. Data for Ghana, Kenya are for 2013, data for Lesotho and Mali are for 2012 and data for Sudan are for 2011. Data for number of mines and their life span are for 2014.

Figure 1 Mining and water supply in rural areas of sub-Saharan Africa in 2014

Source: Data from and World Bank, 2016a, World Development Indicators.

Note: Data for the ores and metals as percentage of merchandise exports are for 2014. Data for the percentage of the rural population using an improved drinking water source in Sub-Saharan African are for 2015. Improved water source is defined as one that is protected from outside contamination.

## Table 1 Sustainable development goals and selected indicators for sub-Saharan countries

| # | Countries | SDG1 | SDG2 | SDG3 | SDG4 | SDG5 | SDG6 | SDG7 | SDG8 | SDG9 | SDG10 | SDG11 | SDG12 | SDG13 | SDG14 | SDG15 | SDG16 | SDG17 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Angola | 30.1 | 29.2 | 477.0 | 28.9 | 3.0 | 28.2 | 6.0 | 6.8 | .. | .. | 55.5 | .. | .. | 0.1 | 8.3 | 2.5 | 21.3 |
| 2 | Benin | 53.1 | 34.0 | 405.0 | 54.4 | 3.5 | 72.1 | 14.5 | 1.0 | 24.9 | 3.0 | 61.5 | 3.5 | .. | 0.0 | 0.2 | 3.5 | 5.3 |
| 3 | Botswana | 18.2 | 31.4 | 129.0 | 83.9 | .. | 92.3 | 23.9 | 18.2 | 33.4 | .. | .. | .. | 3.0 | 0.0 | 1.4 | .. | 18.5 |
| 4 | Burkina Faso | 55.3 | 35.1 | 371.0 | 30.3 | 3.5 | 75.8 | 1.4 | 3.1 | 21.9 | 3.0 | 65.8 | 4.0 | .. | 0.0 | 0.3 | 3.5 | 9.4 |
| 5 | Burundi | 77.7 | 57.5 | 712.0 | 37.9 | 4.0 | 73.8 | 1.2 | 6.9 | 16.7 | 3.0 | 57.9 | 3.0 | 3.3 | 0.0 | 0.3 | 2.0 | 1.4 |
| 6 | Cameroon | 29.3 | 32.6 | 596.0 | 56.4 | 3.0 | 52.7 | 18.5 | 4.3 | 27.8 | 3.0 | 37.8 | 3.0 | .. | 6.8 | 12.5 | 2.5 | 11.0 |
| 7 | Central African Rep. | 66.3 | 40.7 | 882.0 | 17.4 | 2.5 | 54.4 | 8.2 | 7.4 | 13.7 | 2.0 | 93.3 | 2.5 | .. | 0.0 | 1.5 | 2.5 | 4.0 |
| 8 | Chad | 38.4 | 38.7 | 856.0 | 22.4 | 2.5 | 44.8 | 3.1 | 7.0 | 14.2 | 3.0 | 88.2 | 2.5 | .. | 0.0 | 2.2 | 2.0 | 2.5 |
| 9 | Congo, Dem. Rep. | 77.2 | 42.6 | 693.0 | 43.5 | 2.5 | 31.2 | 5.8 | 8.0 | 32.5 | 2.5 | 74.8 | 3.0 | .. | 4.3 | 19.9 | 2.0 | 3.0 |
| 10 | Congo, Rep. | 28.7 | 25.0 | 442.0 | 54.5 | 3.0 | 40.0 | 11.7 | 6.5 | 54.7 | 2.5 | 46.9 | 3.0 | .. | 33.6 | 3.6 | 2.0 | 7.1 |
| 11 | Cote d'Ivoire | 29.0 | 29.6 | 645.0 | 40.1 | 3.0 | 68.8 | 29.0 | 4.0 | 21.5 | 2.5 | 56.0 | 3.0 | 2.5 | 2.1 | 3.4 | 3.0 | 14.6 |
| 12 | Djibouti | 18.3 | 33.5 | 229.0 | 46.4 | 3.0 | 64.7 | 13.0 | .. | .. | 3.0 | 65.6 | 2.5 | .. | 0.2 | 0.5 | 2.5 | 10.7 |
| 13 | Equatorial Guinea | .. | 26.2 | 342.0 | .. | .. | 31.5 | 43.0 | 7.9 | .. | .. | 66.2 | .. | .. | 2.7 | 1.5 | .. | 18.9 |
| 14 | Eritrea | .. | 50.3 | 501.0 | 35.5 | 3.0 | 53.3 | 12.0 | 7.2 | .. | 2.0 | .. | 2.0 | .. | 0.0 | 0.8 | 2.0 | 1.0 |
| 15 | Ethiopia | 33.5 | 40.4 | 353.0 | 36.2 | 3.0 | 48.6 | 7.6 | 5.2 | 16.3 | 3.5 | 73.9 | 4.0 | .. | 0.0 | 8.4 | 3.0 | 2.9 |
| 16 | Gabon | .. | 17.5 | 291.0 | .. | .. | 66.7 | 44.9 | 19.7 | 52.8 | .. | 37.0 | .. | .. | 9.3 | 3.0 | .. | 9.8 |
| 17 | Gambia | .. | 25.0 | 706.0 | 57.5 | 3.5 | 84.4 | 25.7 | 7.0 | .. | 2.5 | 34.8 | 3.5 | .. | 1.2 | 0.1 | 2.0 | 15.6 |
| 18 | Ghana | .. | 18.8 | 319.0 | 67.1 | 4.0 | 84.0 | 41.0 | 2.4 | 26.3 | 4.0 | 37.9 | 4.0 | 3.3 | 1.7 | 1.9 | 4.0 | 18.9 |
| 19 | Guinea | 35.3 | 35.8 | 679.0 | 38.8 | 3.0 | 67.4 | 2.9 | 1.8 | 37.0 | 3.0 | 43.3 | 3.5 | .. | 4.2 | 2.3 | 2.5 | 1.7 |
| 20 | Guinea-Bissau | 67.1 | 27.6 | 549.0 | .. | 2.0 | 60.3 | 21.5 | 6.9 | .. | 2.0 | 82.3 | 2.5 | 1.0 | 45.9 | 0.6 | 2.0 | 3.3 |
| 21 | Kenya | .. | 26.0 | 510.0 | 67.6 | 3.5 | 56.8 | 6.7 | 9.2 | 19.5 | 3.5 | 56.0 | 3.5 | 4.0 | 10.0 | 8.8 | 3.0 | 43.4 |
| 22 | Lesotho | 59.7 | 33.2 | 487.0 | 52.2 | 4.0 | 77.0 | 10.2 | 26.2 | .. | 3.0 | 50.8 | 3.5 | 2.5 | 0.0 | 0.3 | 3.5 | 11.0 |
| 23 | Liberia | 68.6 | 32.1 | 725.0 | 37.9 | 3.0 | 62.6 | 1.2 | 3.8 | .. | 2.5 | 65.7 | 3.0 | .. | 2.0 | 2.6 | 3.0 | 5.4 |
| 24 | Madagascar | 81.8 | 49.2 | 353.0 | 38.4 | 4.0 | 35.3 | 8.1 | 3.6 | 18.1 | 2.5 | 77.2 | 3.0 | 3.8 | 3.4 | 29.2 | 2.0 | 3.7 |
| 25 | Malawi | 70.9 | 42.4 | 634.0 | 39.5 | 3.5 | 89.1 | 2.0 | 7.5 | 16.2 | 3.5 | 66.7 | 3.5 | 1.8 | 0.0 | 3.5 | 2.5 | 5.8 |
| 26 | Mali | 49.3 | 35.8 | 587.0 | 43.5 | 2.5 | 64.1 | 11.9 | 8.1 | 19.3 | 3.0 | 56.3 | 4.0 | .. | 0.0 | 1.5 | 3.0 | 7.0 |
| 27 | Mauritania | 10.9 | 22.0 | 602.0 | 29.9 | 3.5 | 57.1 | 4.4 | 31.0 | .. | 3.0 | 79.9 | 3.0 | .. | 32.3 | 1.3 | 2.5 | 10.7 |
| 28 | Mozambique | 68.7 | 42.1 | 489.0 | 24.5 | 3.5 | 37.0 | 5.4 | 22.6 | 20.1 | 3.0 | 80.3 | 3.5 | 4.0 | 18.0 | 7.2 | 3.0 | 5.9 |
| 29 | Namibia | 22.6 | 23.1 | 265.0 | 64.8 | .. | 84.6 | 17.4 | 18.6 | 30.4 | .. | 33.2 | .. | .. | 28.1 | 5.2 | .. | 14.8 |
| 30 | Niger | 50.3 | 43.0 | 553.0 | 18.8 | 2.5 | 48.6 | 5.2 | 5.1 | 17.6 | 3.0 | 70.1 | 3.5 | .. | 0.0 | 0.9 | 3.0 | 2.0 |
| 31 | Nigeria | 53.5 | 32.9 | 814.0 | 43.8 | 3.0 | 57.3 | 34.4 | 7.5 | 20.4 | 4.0 | 50.2 | 3.5 | 4.0 | 0.2 | 6.0 | 3.0 | 42.7 |
| 32 | Rwanda | 60.3 | 44.3 | 290.0 | 40.2 | 4.5 | 71.9 | 7.7 | 0.6 | 14.2 | 4.0 | 53.2 | 4.0 | .. | 0.0 | 0.9 | 3.5 | 10.6 |
| 33 | Senegal | 38.0 | 19.4 | 315.0 | 40.1 | 3.5 | 67.3 | 26.6 | 10.0 | 23.6 | 3.0 | 39.4 | 3.5 | 2.8 | 14.4 | 1.0 | 3.5 | 17.7 |
| 34 | Sierra Leone | 52.3 | 37.9 | 1,360.0 | 43.4 | 3.0 | 47.8 | 1.2 | 3.3 | 7.6 | 3.5 | 75.6 | 3.5 | 3.0 | 7.8 | 1.3 | 3.0 | 2.1 |
| 35 | Somalia | .. | 25.3 | 732.0 | .. | .. | .. | 17.3 | 6.9 | .. | .. | 73.6 | .. | .. | 0.0 | 6.1 | .. | 1.6 |
| 36 | South Africa | 16.6 | 23.9 | 138.0 | 98.2 | .. | 81.4 | 66.9 | 25.1 | 28.7 | .. | 23.0 | .. | .. | 13.4 | 20.7 | .. | 49.0 |
| 37 | South Sudan | .. | 31.1 | 789.0 | .. | 2.5 | 56.9 | 3.5 | .. | .. | 1.5 | 95.6 | 2.0 | .. | 0.0 | .. | 2.0 | 15.9 |
| 38 | Sudan | 14.9 | 38.2 | 311.0 | 40.2 | 2.5 | .. | 17.8 | 14.8 | 20.5 | 2.5 | 91.6 | 2.0 | .. | 0.0 | 5.1 | 1.5 | 24.6 |
| 39 | Swaziland | 42.0 | 31.0 | 389.0 | 63.0 | .. | 68.9 | 24.5 | 22.3 | 44.2 | .. | 32.7 | .. | .. | 0.0 | 0.1 | .. | 27.1 |
| 40 | Tanzania | 46.6 | 34.8 | 398.0 | 32.3 | 3.5 | 45.5 | 3.6 | 3.1 | 25.9 | 4.0 | 50.7 | 3.0 | 3.5 | 18.2 | 14.8 | 3.0 | 4.9 |
| 41 | Togo | 54.2 | 27.5 | 368.0 | 54.7 | 3.0 | 44.2 | 8.9 | 6.9 | 17.6 | 3.0 | 51.2 | 3.5 | .. | 2.8 | 0.3 | 2.5 | 5.7 |
| 42 | Uganda | 33.2 | 33.7 | 343.0 | 27.6 | 3.5 | 75.8 | 8.1 | 3.8 | 20.4 | 3.5 | 53.6 | 3.5 | .. | 0.0 | 2.8 | 2.0 | 17.7 |
| 43 | Zambia | 64.4 | 40.0 | 224.0 | .. | 3.0 | 51.3 | 5.8 | 13.3 | 33.9 | 2.5 | 54.0 | 3.5 | 3.8 | 0.0 | 3.8 | 3.0 | 17.3 |
| 44 | Zimbabwe | .. | 27.6 | 443.0 | 46.7 | 4.0 | 67.3 | 16.1 | 5.4 | 28.5 | 2.5 | 25.1 | 3.5 | .. | 0.0 | 1.9 | 1.5 | 19.9 |

Source: Data from World Bank, 2016a, World Development Indicators.

**Notes for Table 1**

SDG1 No Poverty. Target - Eliminate poverty measured as income of $1.25 a day. Indicator - Poverty headcount ratio at $1.90 a day (PPP 2011) (% of population) 2011 data. Poverty data mostly for 2011. Some individual figures with a sign are for different years, but not earlier than 2006.
SDG2 No Hunger. Target – By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons. Indicator - Prevalence of stunting, height for age (% of children under 5) - 2014 data. Some figures are later or earlier than 2014, but not earlier than 2006.
SDG3 Good health and well-being. Target - By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births. Indicator - Maternal mortality ratio (modelled estimated for 100,000 live births) 2015 data.
SDG4 Quality education. Target - By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and Goal-4 effective learning outcomes. Indicator - Gross enrolment ratio, secondary, both sexes, %, 2014 data. Gross enrolment ratio, secondary, both sexes (%) data for 2014. Some figures are later or earlier than 2014, but not earlier than 2007.
SDG5 Gender equality. Target - End all forms of discrimination against all women and girls everywhere. Indicator – Country Policy and Institutional Assessment (CPIA) Gender equality rating (1=low, 6=high) 2015 data. Data for Angola is for 2013.
SDG6 Clean water and sanitation. Target - By 2030, achieve universal and equitable access to safe and affordable drinking water for all. Indicator - Improved water source rural (% of rural population with access) 2015 data.
SDG7 Affordable and clean energy. Target - By 2030, ensure universal access to affordable, reliable and modern energy services. Indicator – Access to electricity, rural (% or rural population) 2012 data
SDG8 Decent work and economic growth. Target - By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value. Indicator - Unemployment, total (% of labour force) (modelled ILO estimates) 2014 data.
SDG9 Industry, innovation and infrastructure. Target - Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries. Indicator – Industry, value added (% of GDP) 2015 data.
SDG10 Reduced inequalities. Target - Adopt policies, especially fiscal, wage and social protection policies, and progressively achieve greater equality. Indicator – CPIA social protection rating (1=low to 6=high) 2015 data.
SDG11 Sustainable cities and communities. By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums. Population living in slums (% of urban population) 2014 data.
SDG12 Responsible consumption and production. Target - By 2030, achieve the sustainable management and efficient use of natural resources. Indicator –CPIA Policy and institutions for environmental sustainability rating (1=low to 6=high) 2015 data.
SDG13 Climate action. Target - Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries. Indicator - Disaster risk reduction progress score (1=low to 5=high) 2011 data.
SDG14 Live below water. Target - By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information. Indicator - Marine protected areas (% of territorial waters) 2014 data.
SDG15 Life on land. Target - By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements. Indicator - Global Environmental Facility benefit index for biodiversity (0=no biodiversity potential to 100=maximum) 2008 data.
SDG16 Peace, justice and strong institutions. Target - Substantially reduce corruption and bribery in all their forms. CPIA Transparency, accountability and corruption rating (0=low to 6=high) 2015 data, Angola for 2013. Other data are missing.
SDG17 Partnerships for goals. Target - Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism. Indicator - Internet user (per 100 people) 2014 data.

## Table 2 Mining in sub-Saharan countries in 2014

| # | Countries | Ores and metals as % of merchandise exports | Number of mines in the country | Minimum lifetime of a mine in the country | Maximum lifetime of a mine in the country |
|---|---|---|---|---|---|
| 1 | Angola | n/a | 8 | 4 | 40 |
| 2 | Benin | 4.4 | n/a | n/a | n/a |
| 3 | Botswana | 7.0 | 20 | 4.5 | 98 |
| 4 | Burkina Faso | 8.7 | 15 | 2 | 49 |
| 5 | Burundi | 3.3 | n/a | n/a | n/a |
| 6 | Cameroon | 3.2 | 4 | 24 | 25 |
| 7 | Central African Republic | 0.3 | 2 | 8.3 | 16 |
| 8 | Chad | n/a | n/a | n/a | n/a |
| 9 | Congo, Dem. Rep | n/a | 37 | 2 | 62 |
| 10 | Congo, Rep. | 0.0 | 4 | 20 | 54 |
| 11 | Cote d'Ivoire | 0.4 | 8 | 6 | 10 |
| 12 | Djibouti | n/a | n/a | n/a | n/a |
| 13 | Equatorial Guinea | n/a | n/a | n/a | n/a |
| 14 | Eritrea | n/a | 7 | 7 | 16 |
| 15 | Ethiopia | 0.3 | n/a | n/a | n/a |
| 16 | Gabon | 3.0 | 5 | 25 | 100 |
| 17 | Gambia | 2.5 | n/a | n/a | n/a |
| 18 | Ghana | 3.6 | 11 | 8.5 | 111 |
| 19 | Guinea | 77.9 | 16 | 7 | 75 |
| 20 | Guinea-Bissau | n/a | n/a | n/a | n/a |
| 21 | Kenya | 2.2 | 3 | 13 | 13 |
| 22 | Lesotho | 0.4 | 4 | 15 | 35 |
| 23 | Liberia | n/a | 8 | 5 | 30 |
| 24 | Madagascar | 36.8 | 7 | 15 | 40 |
| 25 | Malawi | 3.2 | 3 | 11 | 20 |
| 26 | Mali | 3.4 | 11 | 7 | 30 |
| 27 | Mauritania | 59.5 | 5 | 15 | 65 |
| 28 | Mozambique | 34.4 | 7 | 14 | 120 |
| 29 | Namibia | 24.8 | 15 | 5 | 53 |
| 30 | Niger | 45.9 | 6 | 7 | 52 |
| 31 | Nigeria | 0.4 | n/a | n/a | n/a |
| 32 | Rwanda | 46.5 | n/a | n/a | n/a |
| 33 | Senegal | 5.2 | 8 | 9 | 70 |
| 34 | Sierra Leone | 86.4 | 10 | 8 | 70 |
| 35 | Somalia | n/a | n/a | n/a | n/a |
| 36 | South Africa | 25.9 | 166 | 4 | 168 |
| 37 | South Sudan | n/a | n/a | n/a | n/a |
| 38 | Sudan | 0.4 | n/a | n/a | n/a |
| 39 | Swaziland | n/a | n/a | n/a | n/a |
| 40 | Tanzania | 17.4 | 23 | 6 | 30 |
| 41 | Togo | 20.0 | n/a | n/a | n/a |
| 42 | Uganda | 0.6 | n/a | n/a | n/a |
| 43 | Zambia | 78.2 | 15 | 9 | 106 |
| 44 | Zimbabwe | 24.5 | 17 | 7 | 66 |

Source: Data from World Bank, 2016a, World Development Indicators and World Bank, 2016b, Energy and extractives Open Data Platform.

Note: n/a - data not available. Data for ores and minerals exports are for 2014. Data for Ghana, Kenya are for 2013, data for Lesotho and Mali are for 2012 and data for Sudan are for 2011. Data for number of mines and their life span are for 2014.

**Highlights**

- The mining industry can maximise its contribution to the UN Sustainable Development Goals in sub-Saharan Africa
- Mining companies could further collaborate with other sectors to support the provision of collective goods
- Collective goods, e.g. health, education and infrastructure, are important for market operations
- Mining should prioritise investment into collective goods, climate change technologies, education and health in sub-Saharan Africa
- Mining can extend participation in sharing and circular economy initiatives in sub-Saharan Africa